

REMARKS

The Applicant thanks the Examiner for the thorough examination of the application. Claims 1, 2, 4, 7-12, 14, 15, 17 and 19-30 are pending. By this Amendment, claims 1, 8, 12 and 21 are amended. No new matter is believed to be added to the application by this Amendment. The amendments to the independent claims are supported throughout Applicant's originally filed disclosure including, for example, paragraphs [0052] and [0075] and Figs. 7-22. Claims 28-30 find support in, e.g., Figures 8 and 11 of the application. In this regard, Applicants point out that it has been held that drawings alone constitute proper disclosure even if what is shown in the drawings is accidental. See Ex parte Prybil, 156 USPQ 64 (Bd. Pat. App 1967). Moreover, such disclosure is available for all that it teaches one of ordinary skill in the art. See In re Meng and Driessen, 181 USPQ 94 (CCPA 1974) and In re Aslanian, 200 USPQ 500 (CCPA 1979).

Reconsideration of this Application, as amended, is respectfully requested.

Rejections Based Upon Kodate

Claims 1, 2, 7, 8, 10-12, 17 and 19-27 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Kodate (U.S. Patent 5,748,266) in view of Kan (JP 09-232580) and Jang (U.S. Patent 5,834,328). Claims 4, 9, 14 and 15 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Kodate in view of Kan and Jang. Applicant respectfully traverses.

Because the rejection is based on 35 U.S.C. §103, what is in issue in such a rejection is "the invention as a whole", not just a few features of the claimed invention. Under 35 U.S.C. §103, "[a] patent may not be obtained . . . if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious

at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains." The determination under section 103 is whether the claimed invention as a whole would have been obvious to a person of ordinary skill in the art at the time the invention was made. See In re O'Farrell, 853 F.2d 894, 902, 7 USPQ2d 1673, 1680 (Fed. Cir. 1988). In determining obviousness, the Examiner must explain what the differences between the claimed invention and the prior art are and provide objective factual evidence to support a conclusion that it would be obvious to one of ordinary skill in the art to achieve the claimed invention, which includes those missing features.

In the second place, in rejecting claims under 35 U.S.C. §103, it is incumbent on the examiner to establish a factual basis to support the legal conclusion of obviousness. See, In re Fine, 837 F.2d 1071, 1073, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). In so doing, the examiner is expected to make the factual determinations set forth in Graham v. John Deere Co., 383 U.S. 1, 17, 148 USPQ 459, 467 (1966), and to provide a reason why one of ordinary skill in the pertinent art would have been led to modify the prior art or to combine prior art references to arrive at the claimed invention. Such reason must stem from some teaching, suggestion or implication in the prior art as a whole or knowledge generally available to one having ordinary skill in the art. Uniroyal Inc. v. F-Wiley Corp., 837 F.2d 1044, 1051, 5 USPQ2d 1434, 1438 (Fed. Cir. 1988), cert. denied, 488 U.S. 825 (1988); Ashland Oil, Inc. v. Delta Resins & Refractories, Inc., 776 F.2d 281, 293, 227 USPQ 657, 664 (Fed. Cir. 1985), cert. denied, 475 U.S. 1017 (1986); ACS Hospital Systems, Inc. v. Montefiore Hospital, 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984). These showings by the examiner are an essential part of complying with the burden of presenting a *prima facie* case of obviousness. Note, In re Oetiker, 977 F.2d 1443, 1445, 24

USPQ2d 1443, 1444 (Fed. Cir. 1992). The mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification. In re Fritch, 972 F.2d 1260, 1266, 23 USPQ2d 1780, 1783-84 (Fed. Cir. 1992). To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be suggested or taught by the prior art. In re Royka, 490 F.2d 981, 180 USPQ 580 (CCPA 1970). All words in a claim must be considered in judging the patentability of that claim against the prior art. In re Wilson, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970).

A showing of a suggestion, teaching, or motivation to combine the prior art references is an “essential evidentiary component of an obviousness holding.” C.R. Bard, Inc. v. M3 Sys. Inc., 157 F.3d 1340, 1352, 48 USPQ2d 1225, 1232 (Fed. Cir. 1998). This showing must be clear and particular, and broad conclusory statements about the teaching of multiple references, standing alone, are not “evidence.” See In re Dembiczak, 175 F.3d 994 at 1000, 50 USPQ2d 1614 at 1617 (Fed. Cir. 1999).

Moreover, a factual inquiry whether to modify a reference must be based on objective evidence of record, not merely conclusory statements of the Examiner. See, In re Lee, 277 F.3d 1338, 1343, 61 USPQ2d 1430, 1433 (Fed. Cir. 2002).

The present invention pertains to a liquid crystal display having a combination of features that increases aperture ratio and also increases the capacitance of the storage capacitor. The claimed invention recites a combination of features including (1) a storage electrode formed of a transparent conductive material located in a same layer as said gate electrode and a gate line; (2) an auxiliary storage electrode connected to said storage electrode; (3) a pixel electrode formed to

oppose to said storage electrode having said gate insulating film in between said pixel electrode and said storage electrode, and said pixel electrode being electrically connected with said drain electrode without using a contact hole; and (4) a protective layer covering said source electrode, said drain electrode and some portions of the pixel electrode, wherein a storage capacitor formed by the pixel electrode and the storage electrode that is located in the same layer as the gate electrode and a gate line are substantially the same size to stabilize a pixel voltage.

None of the applied references, taken alone or in combination discloses or suggests, or otherwise renders obvious, the claimed invention. The primary reference used in this rejection, i.e., Kodate, has an edge capacitance LCD structure, i.e., one in which a non-transparent storage line 28 (col. 5, lines 14-18) overlaps with transparent pixel electrode 10 to form a storage capacitor electrode area 82 (col. 7, lines 43-50). This is drastically different than what is claimed.

In an attempt to remedy the deficiencies of Kodate, the Office Action turns to Jang. Jang does not disclose modifying a prior art LCD device that uses an opaque storage electrode 6, but discloses replacing that type LCD structure with an entirely different type of structure, i.e., a structure that does away with the non-transparent storage electrode 6, which is located on the same layer as a gate line 5, with a structure that has a large area transparent storage electrode 25 that is not located in the gate line layer but, instead, is located in a different layer, i.e., in a separate layer above the gate insulating layer 24.

Applicant respectfully submits that the Office Action fails to present any objective factual evidence that Kodate's aperture ratio would be improved by replacing it with the transparent storage electrode structure of Jang. In this regard, the Office Action merely speculates that by doing so, Kodate's storage capacitance would increase. This is pure speculation unsupported by

factual support. It is well settled that a rejection under 35 USC §103 must be supported by objective factual evidence and not just speculation. As is well settled, a rejection must rest on a factual basis, with the facts being interpreted without hindsight reconstruction of the invention from the prior art. In making this evaluation, the examiner has the initial duty of supplying the factual basis for the rejection he advances. He may not, because he doubts that the invention is patentable, resort to speculation, unfounded assumptions or hindsight reconstruction to supply deficiencies in the factual basis. See, In re Warner, 379 F.2d 1011, 1017, 154 USPQ 173, 178 (CCPA 1967), cert. denied, 389 U.S. 1057 (1968).

The only reason given in the Office Action for making such a fundamental redesign of Kodate is “for increasing capacitance.” However, the Office Action does not provide objective factual evidence that Kodate’s pixel-edge located non-transparent electrode needs to have its capacitance increased to work properly, or that Kodate has the same problems that the prior art of Jang has.

Moreover, the Office Action fails to present any objective factual evidence that one of ordinary skill in the art would be properly motivated to substantially redesign and modify Kodate by replacing its non-transparent pixel-edge-located electrode that is located on its gate electrode level and connected to a single gate line, with Jang’s transparent storage electrode extending over a large portion of the pixel electrode, located on a different level than the gate electrode level or gate line level, and connected to two separate gate lines. In order to do this, the method of fabricating Kodate would have to be redesigned at great expense. Additionally, the Office Action fails to provide objective factual evidence that Jang’s transparent storage electrode

configuration would improve the aperture ratio of Kodate enough to justify completely redesigning Kodate.

Furthermore, if Jang's teachings are followed, Kodate's storage electrode will not be located on the gate electrode level, but on a separate level above the gate electrode level, and this will not render the claimed invention obvious, because the claimed invention recites that the storage electrode is on the same level as the gate electrode and gate line.

The Office Action also admits that Kodate does not disclose the positively recited feature of a buffer layer or a buffer metal layer formed over the source and drain electrodes. In an attempt to remedy this deficiency, the Office Action turns to Kan, which discloses a significantly different CMOS transistor than does Kodate. Kan's CMOS transistor had an inverted gate electrode 40 that is located above its source layer 28a and drain layer 28b and is separated therefrom by buffer layer 30 to suppress parasitic capacitance between the source and drain field and the channel field (paragraph [0024]). However, Kodate never mentions a parasitic capacitance problem that needs to be solved, and already employs a channel protective layer 48, which would appear to control any parasitic capacitance issues.

Further, Kan's buffer layer 30 is above its source and drain electrodes 28a and 28b in order to reduce parasitic capacitance between its inverted gate and its source and drain electrodes whereas, because Kodate has a normal buried gate electrode, there would be no reason or incentive to provide a parasitic capacitance suppressing buffer layer over the source and drain electrodes of Kodate. Thus, one of ordinary skill in the art would not be motivated to modify Kodate based on Kan to arrive at the claimed invention.

Also, with respect to claims 12-15, 17 and 19-27, which recite a buffer metal layer, Kan's buffer layer is disclosed as an insulator (paragraphs [0016] and [0019] of Kan, for example), not a metal layer. Accordingly, Kan does not render obvious the use of a buffer metal layer. Moreover, Kodate already discloses using a metal ohmic contact layer 50, so there would be no need to provide a separate buffer layer in Kodate based on Kan's teachings of an insulating buffer layer.

As a result, one having ordinary skill in the art would not be motivated by Kodate, Kan and Jang to produce the invention of claims 1, 12 and 21. A *prima facie* case of obviousness of the invention recited in claims 1, 12 and 21 has thus not been made. Moreover, claims depending upon independent claims 1, 12 and 21 are patentable for at least the above reasons.

Accordingly, reconsideration and withdrawal of this rejection of claims 1, 2, 4, 7, 8-12, 14-15, 17 and 19-27 are respectfully requested.

Conclusion

The Examiner's rejections have been overcome, obviated or rendered moot. No issues remain. It is believed that a full and complete response has been made to the Office Action. The Examiner is accordingly respectfully requested to place the application in condition for allowance and to issue a Notice of Allowability.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Robert J. Webster, Reg. No. 46,472, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

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